

Gravini, Steve

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**From:** Fidei, David  
**Sent:** Monday, August 14, 2006 10:56 AM  
**To:** Gravini, Steve  
**Subject:** FW: Litigation search results - 09/767834

**FYI - for Reissue 10/060204**

-----Original Message-----

**From:** Catlin, Karen (ASRC)  
**Sent:** Friday, August 11, 2006 1:41 PM  
**To:** Fidei, David  
**Subject:** Litigation search results - 09/767834

Good afternoon -

The visual representation and results of the litigation search you requested for US Patent No. 6,332,280 are attached.  
There was no litigation found.  
If you have any trouble with the files, please let me know.

Karen



6332280Li 6332280u 6332280Q  
:igation.doc spat.rtf uestel.rtf

Karen Catlin  
Reference Librarian (ASRC Aerospace)  
Scientific and Technical Information Center  
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pat:6332280

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not within	not within N words
pre	precedes by N words
in	in same paragraph
not in	not in same paragraph
in seg	in same segment
not in seg	not in same segment
in sent	in same sentence
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Pat. No. 6332280 (Copy w/ Cite)

Source: Command Searching > Utility, Design and Plant Patents

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767834 (09) 6332280 December 25, 2001

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

6332280

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Link to Claims Section

December 25, 2001

Vacuum processing apparatus

REISSUE: February 1, 2002 - Reissue Application filed Ex. Gp.: 3749; Re. S.N. 10/060,204 (O.G. June 4, 2002)

INVENTOR: Kato, Shigekazu - Kudamatsu, Japan (JP); Nishihata, Kouji - Tokuyama, Japan (JP); Tsubone, Tsunehiko - Hikari, Japan (JP); Itou, Atsushi - Kudamatsu, Japan (JP)

APPL-NO: 767834 (09)

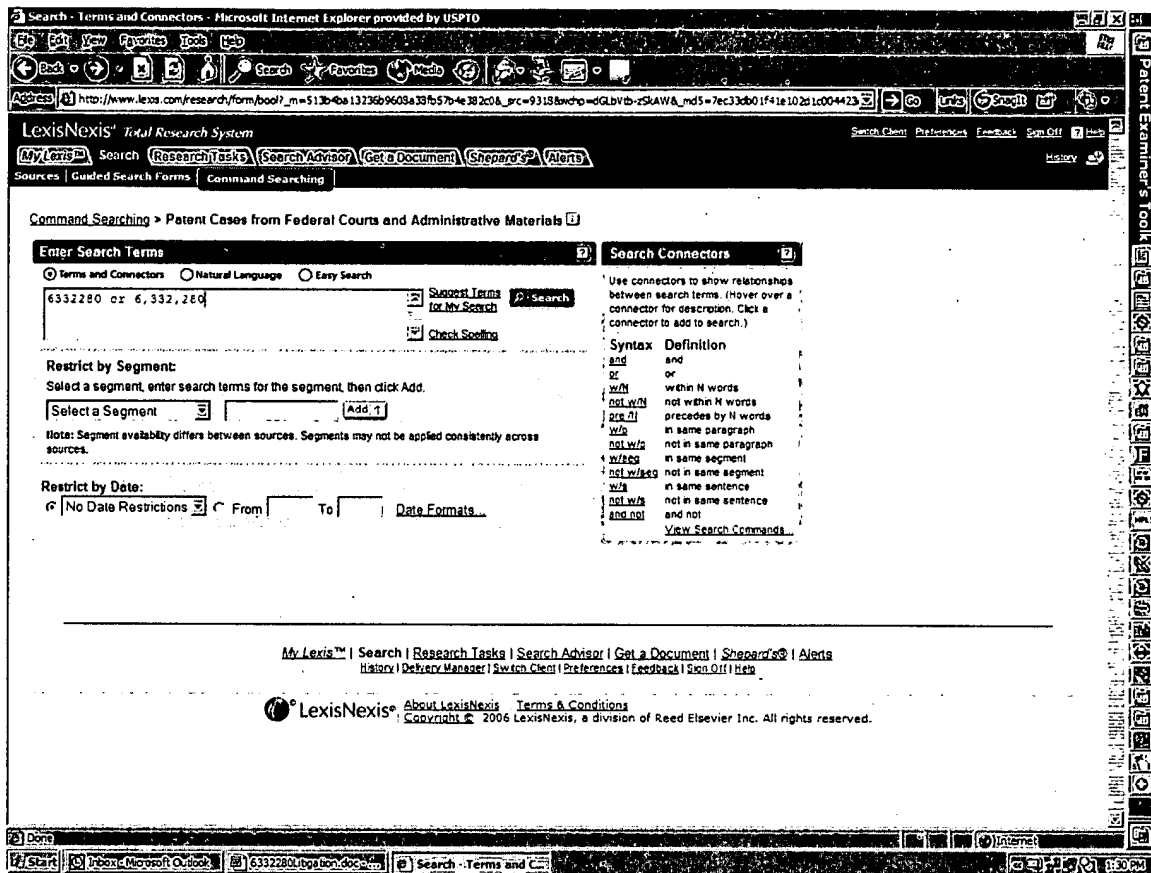
FILED-DATE: January 24, 2001

GRANTED-DATE: December 25, 2001

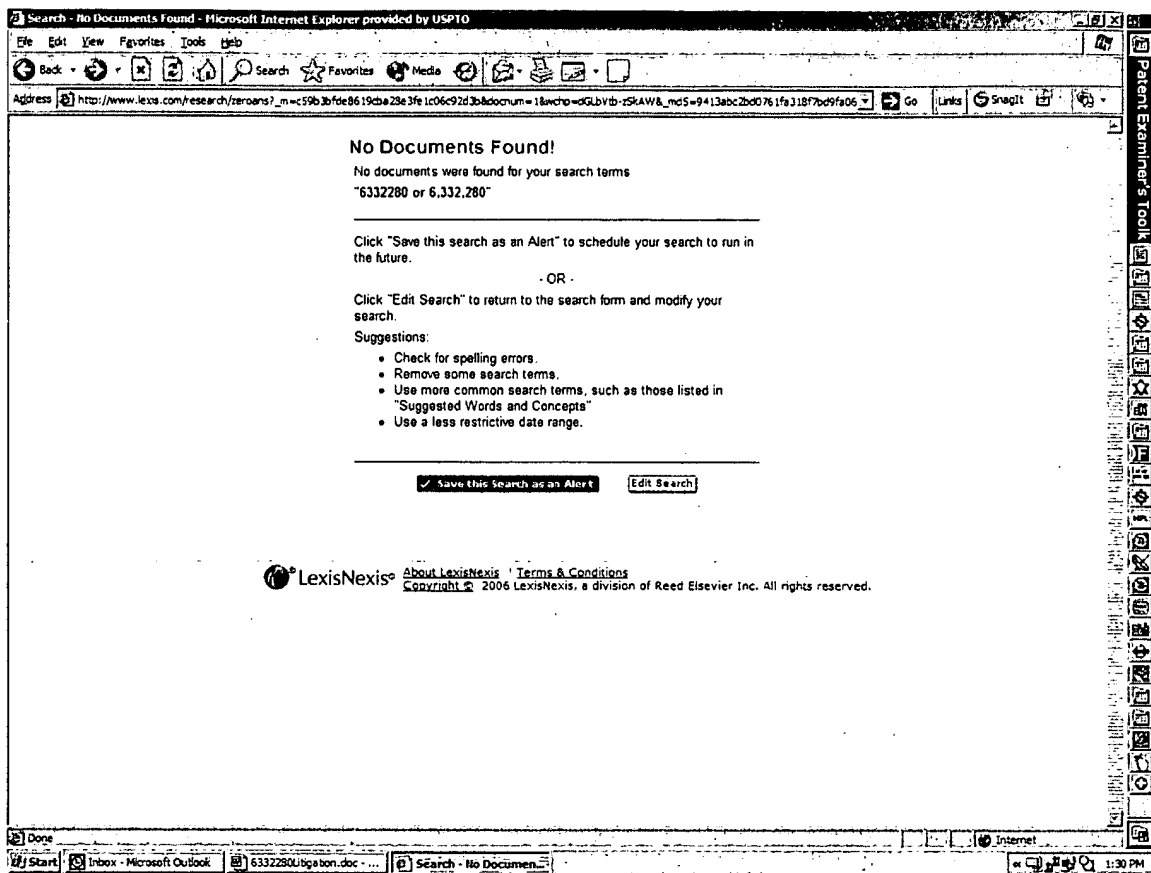
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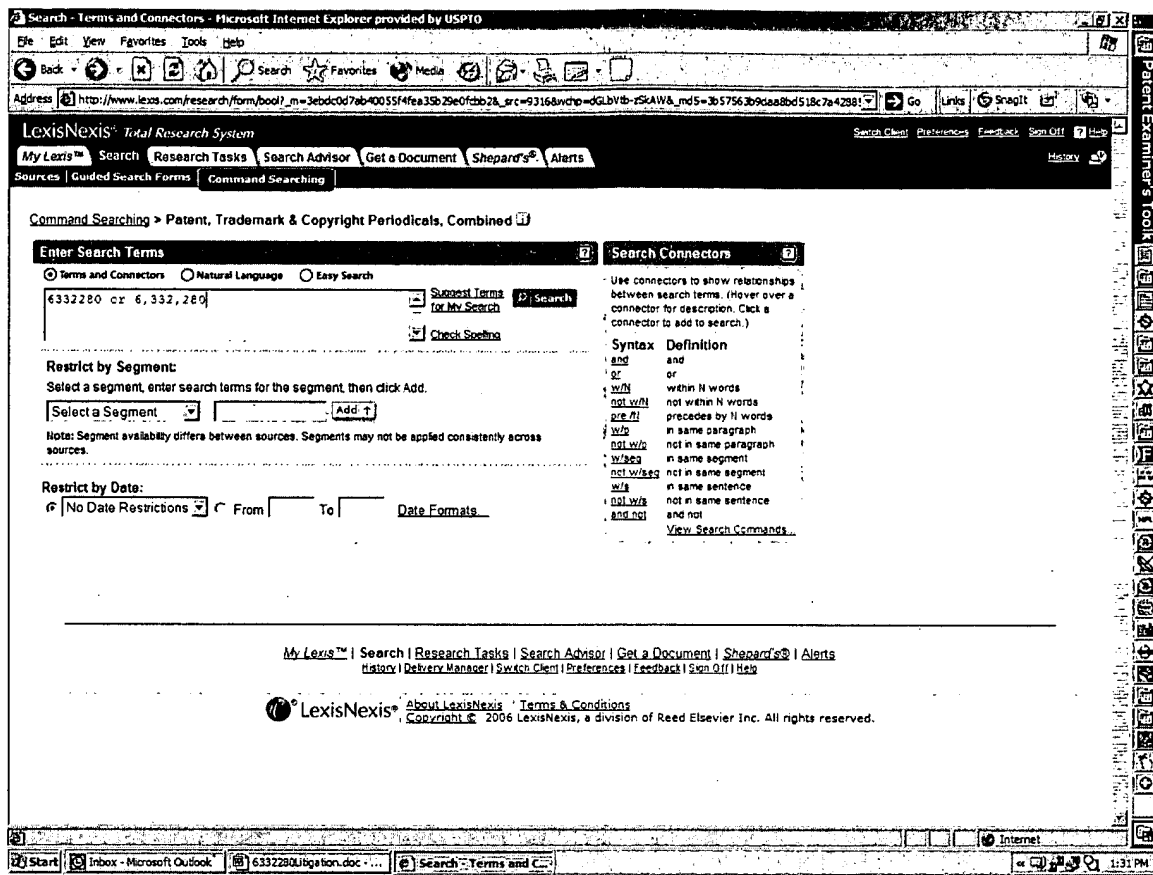
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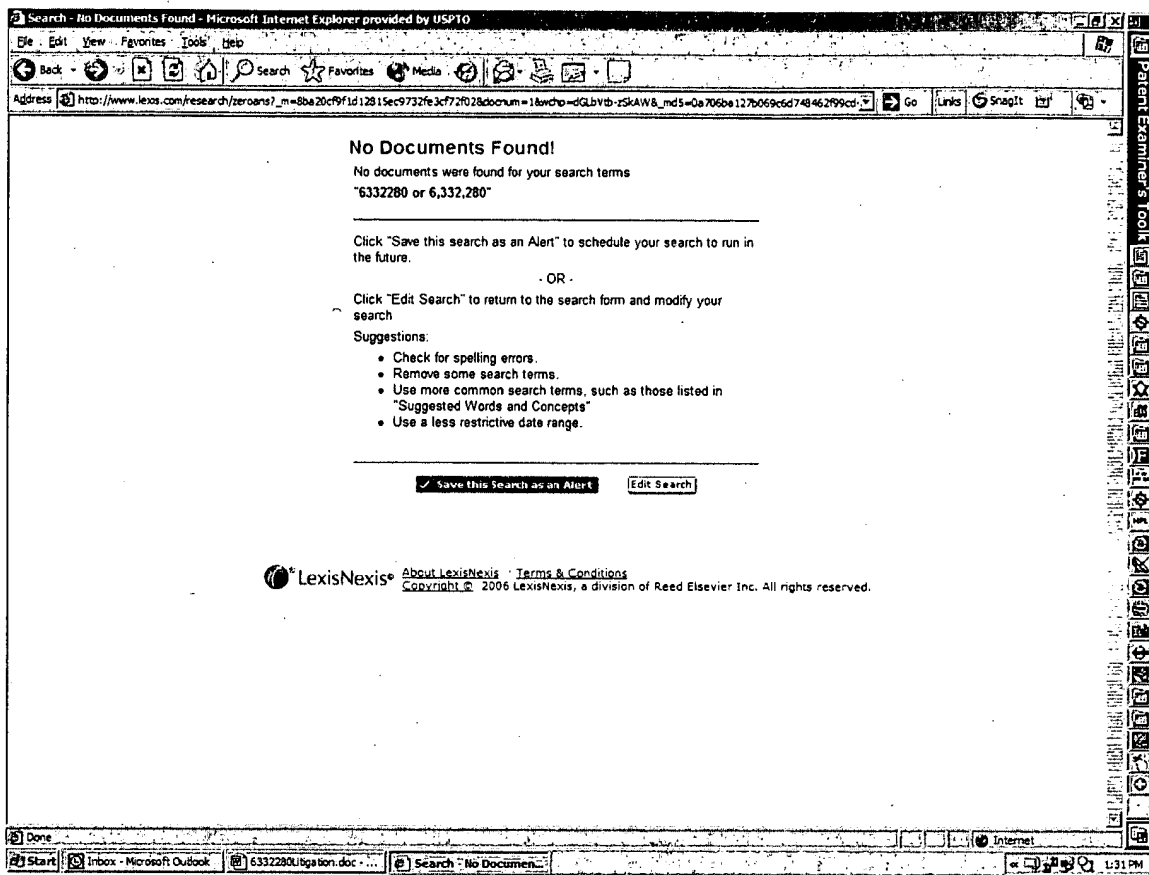
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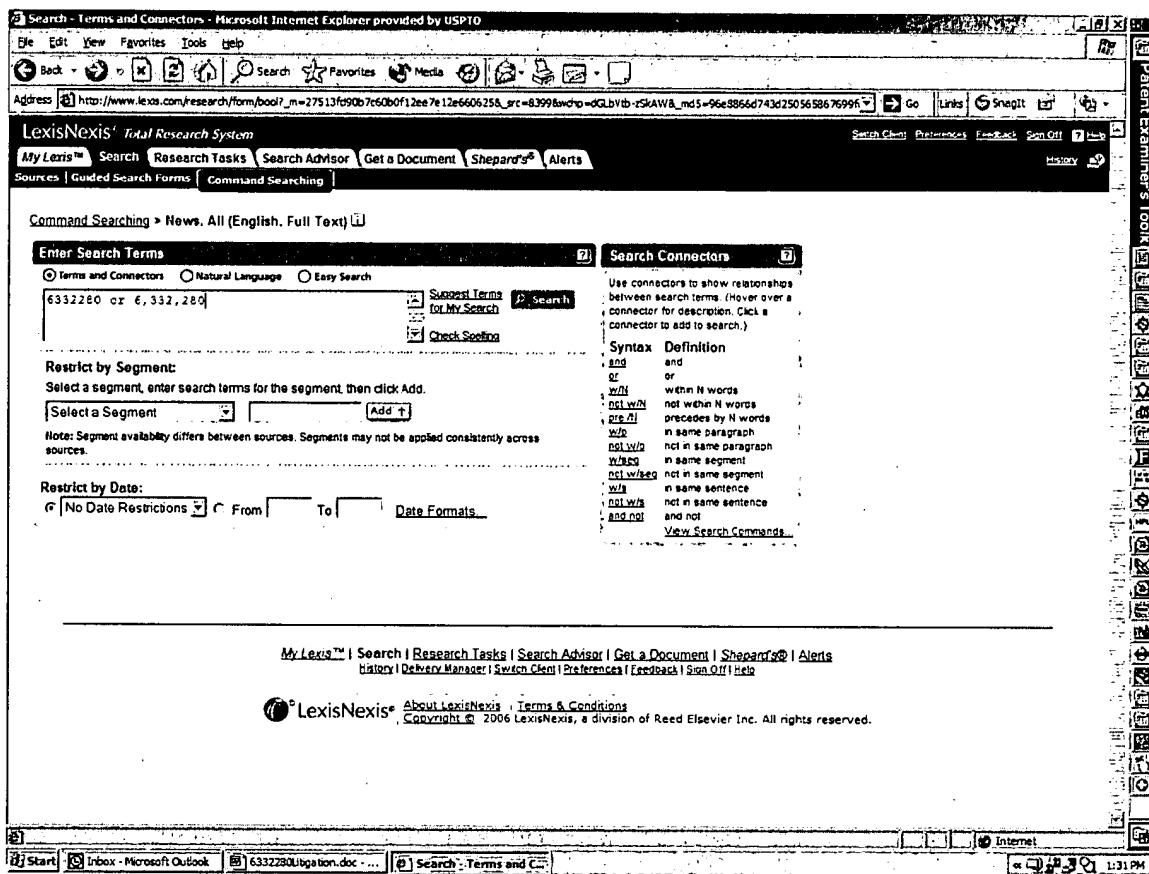
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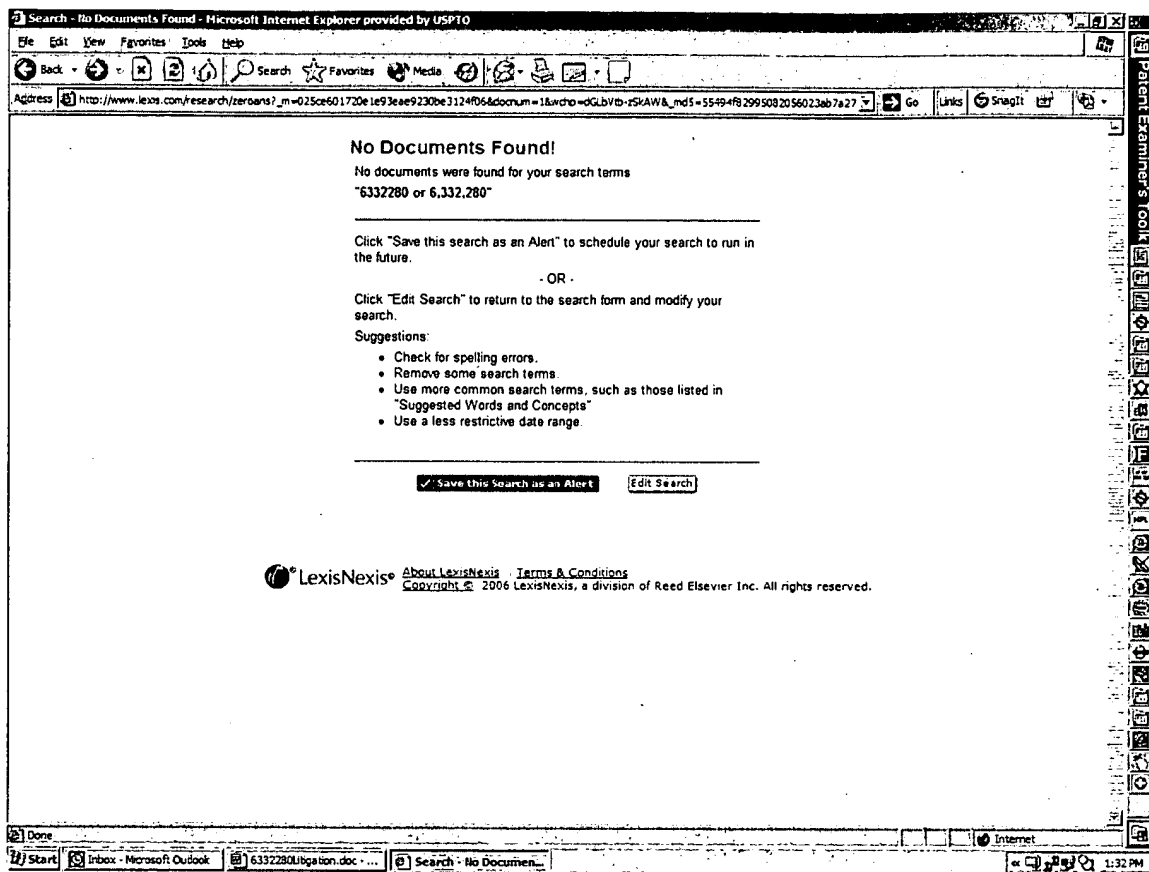


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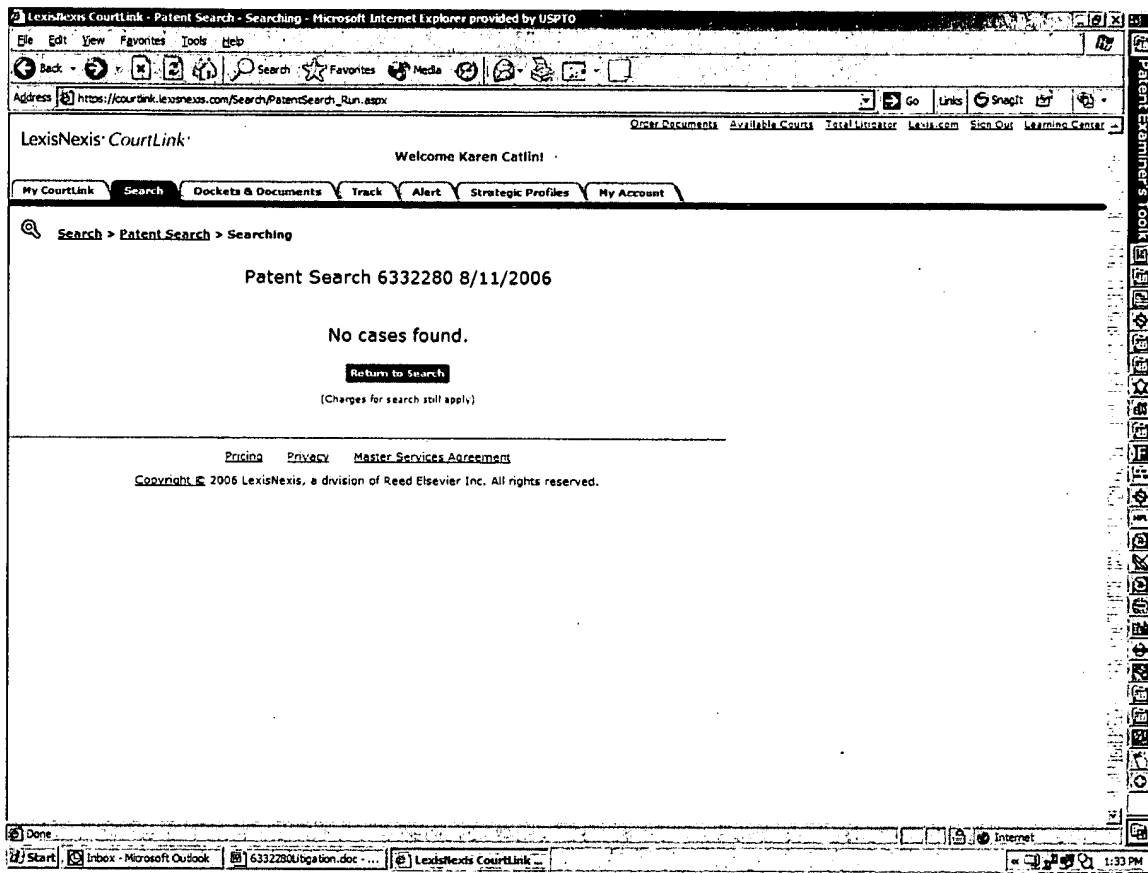
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Time of Request: August 11, 2006 01:30 PM EDT

Number of Lines: 31

Job Number: 1861:113047969

Client ID/Project Name: Fidei

Research Information:

Utility, Design and Plant Patents  
patno=6332280

Send to: CATLIN, KAREN  
USPTO  
600 DULANY ST  
ALEXANDRIA, VA 22314-5782

1 of 1 DOCUMENT

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

**6332280**

[Link to Claims Section](#)

December 25, 2001

Vacuum processing apparatus

**REISSUE:** February 1, 2002 - Reissue Application filed Ex. Gp.: 3749; Re. S.N. 10/060,204 (O.G. June 4, 2002)

**INVENTOR:** Kato, Shigekazu - Kudamatsu, Japan (JP); Nishihata, Kouji - Tokuyama, Japan (JP); Tsubone, Tsunehiko - Hikari, Japan (JP); Itou, Atsushi - Kudamatsu, Japan (JP)

**APPL-NO:** 767834 (09)

**FILED-DATE:** January 24, 2001

**GRANTED-DATE:** December 25, 2001

**ASSIGNEE-AT-ISSUE:** Hitachi, Ltd., Tokyo, Japan (JP), Foreign company or corporation (03)

QUESTEL

Selected file: PLUSPAT

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Query/Command : us6332280/pn

Query/Command : PRT SS 2 MAX 1 LEGALALL

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**Patent Number :**

US2001037585 A1 20011108 [US20010037585]

**Patent Number 2 :**

US6332280 B2 20011225 [US6332280]

**Title :**

(A1) Vacuum processing apparatus and operating method therefor

**Patent Assignee :**

(B2) HITACHI LTD (US)

**Patent Assignee :**

Hitachi, Ltd., Tokyo [JP]

**Patent Assignee 2 :**

(B2) HITACHI LTD (US)

**Inventor(s) :**

(A1) KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO  
(JP); ITOU ATSUSHI (JP)

**Application Nbr :**

US76783401 20010124 [2001US-0767834]

**Filing Details :**

Divsn of US461432 19991216 [1999US-0461432]

Cont. of US177495 19981023 [1998US-0177495]

Cont. of US061062 19980416 [1998US-0061062]

Cont. of US882731 19970626 [1997US-0882731]

Divsn of US593870 19960130 [1996US-0593870]

Cont. of US443039 19950517 [1995US-0443039]

Divsn of US302443 19940909 [1994US-0302443]

Cont. of US096256 19930726 [1993US-0096256]

Cont. of US751952 19910829 [1991US-0751952]

Continuation of: US6012235

Continuation of: US5950330

Continuation of: US5784799

Division of: US5661913

Continuation of: US5553396

Division of: US5457896

Continuation of: US5349762

Continuation of: US5314509

**Priority Details :**

JP22532190 19900829 [1990JP-0225321]

US6106298 19980416 [1998US-0061062]

US9625693 19930726 [1993US-0096256]

US17749598 19981023 [1998US-0177495]

US30244394 19940909 [1994US-0302443]

US44303995 19950517 [1995US-0443039]

US46143299 19991216 [1999US-0461432]

US59387096 19960130 [1996US-0593870]

US75195291 19910829 [1991US-0751952]

US76783401 20010124 [2001US-0767834]

US88273197 19970626 [1997US-0882731]

1 / 1 LGST - ©EPO

**Patent Number :**

US2001037585 A1 20011108 [US20010037585]

US6332280 B2 20011225 [US6332280]

**Application Number :**

US76783401 20010124 [2001US-0767834]

**Action Taken :**

20020604 US/RF-A

REISSUE APPLICATION FILED

EFFECTIVE DATE: 20020201

**Update Code :**

2003-22

1 / 1 CRXX - ©CLAIMS/RRX

**Patent Number :**

6,332,280 A 20011225 [US6332280]

**Patent Assignee :**

Hitachi Ltd JP

**Actions :**

20020201 REISSUE REQUESTED

ISSUE DATE OF O.G.: 20020604

REISSUE REQUEST NUMBER: 10/060204

EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 3749

Reissue Patent Number:

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED  
PATENT

6332280

December 25, 2001

Vacuum processing apparatus

REISSUE: February 1, 2002 - Reissue Application filed Ex. Gp.: 3749; Re. S.N. 10/060,204 (O.G. June 4, 2002)

APPL-NO: 767834 (09)

FILED-DATE: January 24, 2001

GRANTED-DATE: December 25, 2001

PRIORITY: August 29, 1990 - 2-225321, Japan (JP)

ENGLISH-ABST:

This invention relates to a vacuum processing apparatus having vacuum processing chambers the insides of which must be dry cleaned, and to a method of operating such an apparatus. When the vacuum processing chambers are dry-cleaned, dummy substrates are transferred into the vacuum processing chamber by substrates conveyor means from dummy substrate storage means which is disposed in the air atmosphere together with storage means for storing substrates to be processed, and the inside of the vacuum processing chamber is dry-cleaned by generating a plasma. The dummy substrate is returned to the dummy substrate storage means after dry cleaning is completed. Accordingly, any specific mechanism for only the cleaning purpose is not necessary and the construction of the apparatus can be made simple. Furthermore, the dummy substrates used for dry cleaning and the substrates to be processed do not coexist, contamination of the substrates to be processed due to dust and remaining gas can be prevented and the production yield can be high.



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\*\* SS 1: Results 1

1 / 1 PLUSPAT - @QUESTEL-ORBIT

PN - US2001037585 A1 20011108 [US20010037585]  
PN2 - US6332280 B2 20011225 [US6332280]  
TI - (A1) Vacuum processing apparatus and operating method therefor  
PA - (B2) HITACHI LTD (US)  
PA2 - (B2) HITACHI LTD (US)  
IN - (A1) TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP); KATO SHIGEKAZU  
(JP); NISHIHATA KOUJI (JP)  
AP - US76783401 20010124 [2001US-0767834]  
FD - Divsn. of: US 09461432 - 19991216 [1999US-0461432] PENDING  
Cont. of: US 09461432 - 19991216 [1999US-0461432]  
Cont. of: US 09177495 - 19981023 [1998US-0177495] GRANTED  
Cont. of: US 6012235 - 0 [US6012235]  
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Cont. of: US 07751952 - 19910829 [1991US-0751952] ABANDONED  
PR - US76783401 20010124 [2001US-0767834]  
JP22532190 19900829 [1990JP-0225321]  
US46143299 19991216 [1999US-0461432]  
US17749598 19981023 [1998US-0177495]  
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US88273197 19970626 [1997US-0882731]  
US59387096 19960130 [1996US-0593870]  
US44303995 19950517 [1995US-0443039]  
US30244394 19940909 [1994US-0302443]  
US9625693 19930726 [1993US-0096256]  
US75195291 19910829 [1991US-0751952]  
IC - (A1) F26B-013/30  
EC - B41J-002/05D  
B41J-002/36  
B41J-002/365  
C23C-014/56D  
H01L-021/00S2D4  
H01L-021/00S2Z  
H01L-021/00S6  
H01L-021/00S6B  
H01L-021/00S8B  
PCL - ORIGINAL (O) : 034217000; CROSS-REFERENCE (X) : 034092000  
034222000 034225000 034236000 414939000 414940000 134902000  
156345000  
DT - Corresponding document  
CT - US3652444; US3981791; US4138306; US4226897; US4311427; US4313783;  
US4313815; US4318767; US4449885; US4457661; US4534314;  
US4563240; US4576698; US4634331; US4643629; US4705951; US4715764;  
US4824309; US4836733; US4836905; US4851101; US4895107;

US4902934; US4903937; US4909695; US4911597; US4915564; US4917556;  
US4923584; US4924890; US4936329; US4951601; US4969790;  
US5007981; US5014217; US5292393; US5295777; US5351415; US5436848;  
US5452166; US5462397; US5504033; US5504347; US5509771;  
US5549435; US5556714; US5651858; US5675461; US5685684; US5766360;  
US5970908; US6103055; EP20246453; EP20381338; JP5729577;  
JP60246635; JP6244571; JP6250463; JP6289881; JP62207866;  
JP63-133521; JP63153270; JP636582; JP6412037; JP131970; JP131971;  
JP1135015; JP1251734; JP1298180; JP1310553; JP261064; JP265252;  
JP294647; JP2106037; JP430549; WO8707309  
R.P.H. Chang, "Multipurpose plasma reactor for materials research  
and processing", J. Vac. Sci. Technol., vol. 14, No. 1,  
Jan./Feb. 1977, pp. 278-280.

Semiconductor Equipment Association of Japan, "Terminological  
Dictionary of Semiconductor Equipment", front, table, p. 183,  
back, Nov. 20, 1987.

Semiconductor Equipment Association of Japan, "Semiconductor  
News", vol. 4, pp. 38-43, Apr. 10, 1987 (w/translation).

- STG - (A1) Utility Patent Application published on or after January 2, 2001  
STG2 - (B2) U.S. Patent (with pre-grant pub.) after Jan. 2, 2001  
AB - This invention relates to a vacuum processing apparatus having  
vacuum processing chambers the insides of which must be dry  
cleaned, and to a method of operating such an apparatus. When the  
vacuum processing chambers are dry-cleaned, dummy substrates are  
transferred into the vacuum processing chamber by substrates  
conveyor means from dummy substrate storage means which is  
disposed in the air atmosphere together with storage means for  
storing substrates to be processed, and the inside of the vacuum  
processing chamber is dry-cleaned by generating a plasma. The  
dummy substrate is returned to the dummy substrate storage means  
after dry cleaning is completed. Accordingly, any specific  
mechanism for only the cleaning purpose is not necessary and the  
construction of the apparatus can be made simple. Furthermore,  
the dummy substrates used for dry cleaning and the substrates to  
be processed do not coexist, contamination of the substrates to  
be processed due to dust and remaining gas can be prevented and  
the production yield can be high.
- UP - 2001-46

1 / 2 LGST - @LEGSTAT  
PN - US 6332280 [US6332280]  
AP - US 767834/01 20010124 [2001US-0767834]  
DT - US-P  
ACT - 20010124 US/AE-A  
APPLICATION DATA (PATENT)  
US 767834/01 20010124 [2001US-0767834]  
  
20011225 US/BB  
PATENT (PREVIOUS PRE-GRANT PUBLICATION)  
  
20020604 US/RF  
REISSUE APPLICATION FILED  
20020201  
UP - 2002-24

2 / 2 LGST - @LEGSTAT  
PN - US 2001037585 [US20010037585]  
AP - US 767834/01 20010124 [2001US-0767834]

DT - US-P  
ACT - 20010124 US/AE-A  
APPLICATION DATA (PATENT)  
US 767834/01 20010124 [2001US-0767834]  
  
20011108 US/A1A1  
PATENT APPLICATION PUBLICATION (PRE-GRANT)  
UP - 2001-47

1 / 1 CRXX - ©CLAIMS/RRX  
PN - 6,332,280 A 20011225 [US6332280]  
PA - Hitachi Ltd JP  
ACT - 20020201 REISSUE REQUESTED  
ISSUE DATE OF O.G.: 20020604  
REISSUE REQUEST NUMBER: 10/060204  
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 3749

Reissue Patent Number:

1 / 1 PAST - ©Thomson Derwent  
AN - 200223-001865  
PN - 6332280 A [US6332280]  
OG - 2002-06-04  
ACT - REISSUE APPLICATION FILED

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10473594

Basic Patent (No,Kind,Date): EP 475604 A1 19920318 <No. of Patents: 080>

PATENT FAMILY:

GERMANY (DE)

Patent (No,Kind,Date): DE 69128861 C0 19980312

VAKUUMSBEHANDLUNGSVORRICHTUNG UND REINIGUNGSVERFAHREN DAFUER (German)

Patent Assignee: HITACHI LTD (JP)

Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHICO (JP);

NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)

Priority (No,Kind,Date): JP 90225321 A 19900829

Applic (No,Kind,Date): DE 69128861 A 19910819

IPC: \* H01L-021/00

Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844

JAPIO Reference No: \* 160351C000155

Language of Document: German

Patent (No,Kind,Date): DE 69128861 T2 19981008

VAKUUMSBEHANDLUNGSVORRICHTUNG UND REINIGUNGSVERFAHREN DAFUER (German)

Patent Assignee: HITACHI LTD (JP)

Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHICO (JP);

NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)

Priority (No,Kind,Date): JP 90225321 A 19900829

Applic (No,Kind,Date): DE 69128861 A 19910819

IPC: \* H01L-021/00

Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844

JAPIO Reference No: \* 160351C000155

Language of Document: German

EUROPEAN PATENT OFFICE (EP)

Patent (No,Kind,Date): EP 475604 A1 19920318

VACUUM PROCESSING APPARATUS AND CLEANING METHOD THEREFOR (English;  
French; German)

Patent Assignee: HITACHI LTD (JP)

Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHICO (JP);

NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)

Priority (No,Kind,Date): JP 90225321 A 19900829

Applic (No,Kind,Date): EP 91307625 A 19910819

Designated States: (National) DE; FR; GB

IPC: \* H01L-021/00

Derwent WPI Acc No: ; G 92-090205

Language of Document: English

Patent (No,Kind,Date): EP 805481 A2 19971105

VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English;  
French; German)

Patent Assignee: HITACHI LTD (JP)

Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);

TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)

Priority (No,Kind,Date): EP 91307625 A3 19910819; JP 90225321 A  
19900829

Applic (No,Kind,Date): EP 97111628 A 19910819

Designated States: (National) DE; FR; GB

IPC: \* H01L-021/00; C23C-014/56

Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844; C 97-529274

JAPIO Reference No: \* 160351C000155

Language of Document: English

Patent (No,Kind,Date): EP 856875 A2 19980805

VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English;  
French; German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): EP 97111628 A3 19910819; JP 90225321 A  
19900829  
Applic (No,Kind,Date): EP 98106162 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844; G 98-401136  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): EP 1076354 A2 20010214  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English;  
French; German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHICO (JP);  
NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): EP 97111628 A3 19910819; EP 91307625 A3  
19910819; JP 90225321 A 19900829  
Applic (No,Kind,Date): EP 2000121402 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): EP 1079418 A2 20010228  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English;  
French; German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHICO (JP);  
NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): EP 97111628 A3 19910819; EP 91307625 A3  
19910819; JP 90225321 A 19900829  
Applic (No,Kind,Date): EP 2000121401 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844; G 02-107535  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): EP 805481 A3 19980520  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English;  
French; German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): EP 91307625 A3 19910819; JP 90225321 A  
19900829  
Applic (No,Kind,Date): EP 97111628 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00; C23C-014/56  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): EP 856875 A3 19990428  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English;  
French; German)

Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): EP 97111628 A3 19910819; JP 90225321 A  
19900829  
Applic (No,Kind,Date): EP 98106162 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): EP 1076354 A3 20020807  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English;  
French; German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHICO (JP);  
NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): EP 97111628 A3 19910819; EP 91307625 A3  
19910819; JP 90225321 A 19900829  
Applic (No,Kind,Date): EP 2000121402 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): EP 1079418 A3 20020807  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English;  
French; German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHICO (JP);  
NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): EP 97111628 A3 19910819; EP 91307625 A3  
19910819; JP 90225321 A 19900829  
Applic (No,Kind,Date): EP 2000121401 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): EP 475604 B1 19980204  
VACUUM PROCESSING APPARATUS AND CLEANING METHOD THEREFOR (English;  
French; German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHICO (JP);  
NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): JP 90225321 A 19900829  
Applic (No,Kind,Date): EP 91307625 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English

JAPAN (JP)

Patent (No,Kind,Date): JP 4108531 A2 19920409  
VACUUM TREATMENT APPARATUS (English)  
Patent Assignee: HITACHI LTD  
Author (Inventor): KATO SHIGEKAZU; NISHIHATA KOJI; TSUBONE TSUNEHICO;

ITO ATSUSHI

Priority (No,Kind,Date): JP 90225321 A 19900829

Applic (No,Kind,Date): JP 90225321 A 19900829

IPC: \* B01J-003/00

JAPIO Reference No: ; 160351C000155

Language of Document: Japanese

Patent (No,Kind,Date): JP 4110169 A2 19920410

IMAGE RECORDER (English)

Patent Assignee: CANON KK

Author (Inventor): SUZUKI AKIO

Priority (No,Kind,Date): JP 90228396 A 19900831

Applic (No,Kind,Date): JP 90228396 A 19900831

IPC: \* B41J-002/365; B41J-002/36

JAPIO Reference No: ; 160353M000093

Language of Document: Japanese

Patent (No,Kind,Date): JP 2644912 B2 19970825

SHINKUSHORISOCHIOYOBISONONTENHOHO (English)

Priority (No,Kind,Date): JP 90225321 A 19900829

Applic (No,Kind,Date): JP 90225321 A 19900829

IPC: \* B01J-003/00

Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844

JAPIO Reference No: \* 160351C000155

Language of Document: Japanese

Patent (No,Kind,Date): JP 2950950 B2 19990920

Priority (No,Kind,Date): JP 90228396 A 19900831

Applic (No,Kind,Date): JP 90228396 A 19900831

IPC: \* B41J-002/01; B41J-002/36

Derwent WPI Acc No: \* G 94-279094

JAPIO Reference No: \* 160353M000093

Language of Document: Japanese

KOREA, REPUBLIC (KR)

Patent (No,Kind,Date): KR 184682 B1 19990415

VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)

Patent Assignee: HITACHI LTD (JP)

Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)

Priority (No,Kind,Date): JP 90225321 A 19900829

Applic (No,Kind,Date): KR 9114984 A 19910829

IPC: \* H01L-021/304

Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844

JAPIO Reference No: \* 160351C000155

Language of Document: Korean

Patent (No,Kind,Date): KR 212819 B1 19990901

TRANSFERRING SYSTEM AND VACUUM TREATING APPARATUS AND METHOD THEREBY (English)

Patent Assignee: HITACHI LTD (JP)

Author (Inventor): NISHIHATA GOJI (JP); TSUBONE TSUNEHICO (JP); ITO  
ATSUSHI (JP)

Priority (No,Kind,Date): JP 90225321 A 19900829; KR 9114984 A3  
19910829

Applic (No,Kind,Date): KR 9846757 A 19981102

IPC: \* H01L-021/304

Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844

JAPIO Reference No: \* 160351C000155

Language of Document: Korean

Patent (No,Kind,Date): KR 212874 B1 19990901

TRANSFERRING SYSTEM AND VACUUM TREATING APPARATUS THEREBY (English)

Patent Assignee: HITACHI LTD (JP)

Author (Inventor): GATO SIGEGATSU (JP); NISHIHATA GOJI (JP); TSUBONE  
TSUNEHICO (JP); ITO ATSUSI (JP)  
Priority (No,Kind,Date): JP 90225321 A 19900829; KR 9114984 A3  
19910829  
Applic (No,Kind,Date): KR 9846756 A 19981102  
IPC: \* H01L-021/304  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: Korean

UNITED STATES OF AMERICA (US)

Patent (No,Kind,Date): US 5314509 A 19940524  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): JP 90225321 A 19900829  
Applic (No,Kind,Date): US 751951 A 19910829  
National Class: \* 034406000; 034092000; 134902000; 414225000  
IPC: \* B08B-003/00; C23C-016/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English

Patent (No,Kind,Date): US 5343231 A 19940830  
IMAGE RECORDING APPARATUS CAPABLE OF CORRECTING DENSITY UNEVENNESS  
(English)  
Patent Assignee: CANON KK (JP)  
Author (Inventor): SUZUKI AKIO (JP)  
Priority (No,Kind,Date): US 3992 A 19930115; JP 90228396 A  
19900831; US 751952 B1 19910829  
Applic (No,Kind,Date): US 3992 A 19930115  
National Class: \* 347014000; 347015000  
IPC: \* B41J-002/05  
Derwent WPI Acc No: \* G 94-279094; G 94-279094  
JAPIO Reference No: \* 160353M000093  
Language of Document: English

Patent (No,Kind,Date): US 5349762 A 19940927  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 96256 A 19930726; JP 90225321 A  
19900829; US 751951 A1 19910829  
Applic (No,Kind,Date): US 96256 A 19930726  
National Class: \* 034406000; 034092000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English

Patent (No,Kind,Date): US 5457896 A 19951017  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 302443 A 19940909; JP 90225321 A  
19900829; US 96256 A1 19930726; US 751951 A1 19910829  
Applic (No,Kind,Date): US 302443 A 19940909  
Addnl Info: 5349762 Patented; 5314509 Patented  
National Class: \* 034406000; 034092000



IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 5553396 A 19960910  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 443039 A 19950517; JP 90225321 A  
19900829; US 302443 A3 19940909; US 96256 A1 19930726; US 751951  
A1 19910829  
Applic (No,Kind,Date): US 443039 A 19950517  
Addnl Info: 5457896 Patented; 5349762 Patented; 5314509 Patented  
National Class: \* 034406000; 034092000; 414225000; 134902000  
IPC: \* B08B-003/00; C23C-016/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 5661913 A 19970902  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 593870 A 19960130; JP 90225321 A  
19900829; US 443039 A1 19950517; US 302443 A3 19940909; US 96256  
A1 19930726; US 751951 A1 19910829  
Applic (No,Kind,Date): US 593870 A 19960130  
Addnl Info: 5553396 Patented; 5457896 Patented; 5349762 Patented;  
5314509 Patented  
National Class: \* 034406000; 134902000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 5784799 A 19980728  
VACUUM PROCESSING APPARATUS FOR SUBSTATE WAFERS (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 882731 A 19970626; JP 90225321 A  
19900829; US 593870 A3 19960130; US 443039 A1 19950517; US 302443  
A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applic (No,Kind,Date): US 882731 A 19970626  
Addnl Info: 5661913 Patented; 5553396 Patented; 5457896 Patented;  
5349762 Patented; 5314509 Patented  
National Class: \* 034092000; 414217000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 5950330 A 19990914  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 61062 A 19980416; JP 90225321 A  
19900829; US 882731 A1 19970626; US 593870 A3 19960130; US 443039

A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US  
 751951 A1 19910829  
 Applic (No,Kind,Date): US 61062 A 19980416  
 Addnl Info: 5784799 Patented; 5661913 Patented; 5553396 Patented;  
 5457896 Patented; 5349762 Patented; 5314509 Patented  
 National Class: \* 034406000  
 IPC: \* F26B-005/04  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 6012235 A 20000111  
 VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
 Patent Assignee: HITACHI LTD (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
 TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 177495 A 19981023; JP 90225321 A  
 19900829; US 61062 A1 19980416; US 882731 A1 19970626; US 593870  
 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US  
 96256 A1 19930726; US 751951 A1 19910829  
 Applic (No,Kind,Date): US 177495 A 19981023  
 Addnl Info: 5784799 Patented; 5661913 Patented; 5553396 Patented;  
 5457896 Patented; 5349762 Patented; 5314509 Patented  
 National Class: \* 034406000  
 IPC: \* F26B-013/30  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 6044576 A 20000404  
 VACUUM PROCESSING AND OPERATING METHOD USING A VACUUM CHAMBER (English)  
 Patent Assignee: HITACHI LTD (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
 TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 390684 A 19990907; JP 90225321 A  
 19900829; US 177495 A3 19981023; US 61062 A1 19980416; US 882731  
 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US  
 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829  
 Applic (No,Kind,Date): US 390684 A 19990907  
 Addnl Info: 5950330 Patented; 5784799 Patented; 5661913 Patented;  
 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509  
 Patented  
 National Class: \* 034406000  
 IPC: \* F26B-005/04  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 6055740 A 20000502  
 VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
 Patent Assignee: HITACHI LTD (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
 TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 231451 A 19990115; JP 90225321 A  
 19900829; US 61062 A1 19980416; US 882731 A1 19970626; US 593870  
 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US  
 96256 A1 19930726; US 751951 A1 19910829  
 Applic (No,Kind,Date): US 231451 A 19990115  
 Addnl Info: 5784799 Patented; 5661913 Patented; 5553396 Patented;  
 5457896 Patented; 5349762 Patented; 5314509 Patented  
 National Class: \* 034092000; 034228000  
 IPC: \* F26B-013/30

Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 6070341 A 20000606  
 VACUUM PROCESSING AND OPERATING METHOD WITH WAFERS, SUBSTRATES AND/OR  
 SEMICONDUCTORS (English)  
 Patent Assignee: HITACHI LTD (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
 TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 390681 A 19990907; JP 90225321 A  
 19900829; US 177495 A3 19981023; US 61062 A1 19980416; US 882731  
 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US  
 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829  
 Applic (No,Kind,Date): US 390681 A 19990907  
 Addnl Info: 5950330 Patented; 5784799 Patented; 5661913 Patented;  
 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509  
 Patented  
 National Class: \* 034406000  
 IPC: \* F26B-005/04  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 6108929 A 20000829  
 VACUUM PROCESSING APPARATUS (English)  
 Patent Assignee: HITACHI LTD (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
 TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 461433 A 19991216; JP 90225321 A  
 19900829; US 231451 A1 19990115; US 61062 A1 19980416; US 882731  
 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US  
 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829  
 Applic (No,Kind,Date): US 461433 A 19991216  
 Addnl Info: 5950330 Patented; 5784799 Patented; 5661913 Patented;  
 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509  
 Patented  
 National Class: \* 034092000  
 IPC: \* F26B-013/30  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 6112431 A 20000905  
 VACUUM PROCESSING AND OPERATING METHOD (English)  
 Patent Assignee: HITACHI LTD (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
 TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 389461 A 19990903; JP 90225321 A  
 19900829; US 177495 A3 19981023; US 61062 A1 19980416; US 882731  
 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US  
 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829  
 Applic (No,Kind,Date): US 389461 A 19990903  
 Addnl Info: 5950330 Patented; 5784799 Patented; 5661913 Patented;  
 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509  
 Patented  
 National Class: \* 034406000  
 IPC: \* F26B-005/04  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English

Patent (No,Kind,Date): US 20010000048 AA 20010322  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 725257 A 20001129; JP 90225321 A  
19900829; US 552572 A1 20000419; US 461432 B3 19991216; US 177495  
A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US  
593870 A3 19960130; US 443039 A1 19950517; US 302443 A3  
19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applic (No,Kind,Date): US 725257 A 20001129  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented  
National Class: \* 034092000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010001901 AA 20010531  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 766976 A 20010123; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 766976 A 20010123  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034406000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010001902 AA 20010531  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 767837 A 20010124; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829; US 766587 A3 20010123  
Applic (No,Kind,Date): US 767837 A 20010124  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034406000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155

Language of Document: English  
 Patent (No,Kind,Date): US 20010002517 AA 20010607  
 VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
 Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
 TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
 TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 766975 A 20010123; JP 90225321 A  
 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
 ; US 751952 B1 19910829  
 Applic (No,Kind,Date): US 766975 A 20010123  
 Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
 Patented  
 National Class: \* 034406000  
 IPC: \* F26B-005/04  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
 98-401136; G 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 20010003873 AA 20010621  
 VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
 Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
 TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
 TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 781296 A 20010213; JP 90225321 A  
 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
 ; US 751951 A1 19910829; US 766587 A 20010123  
 Applic (No,Kind,Date): US 781296 A 20010213  
 Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
 Patented; 5314509 Patented  
 National Class: \* 034406000  
 IPC: \* F26B-005/04  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 20010004554 AA 20010621  
 VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
 Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
 TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
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 Priority (No,Kind,Date): US 766587 A 20010123; JP 90225321 A  
 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
 ; US 751952 B1 19910829  
 Applic (No,Kind,Date): US 766587 A 20010123  
 Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
 Patented  
 National Class: \* 438758000; 438907000  
 IPC: \* H01L-021/31  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
 98-401136; G 02-107535; G 02-123844

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Language of Document: English  
Patent (No,Kind,Date): US 20010004807 AA 20010628  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 780444 A 20010212; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 780444 A 20010212  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034406000; 034092000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010007175 AA 20010712  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781298 A 20010213; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 781298 A 20010213  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034417000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010008050 AA 20010719  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
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Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781293 A 20010213; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 781293 A 20010213  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034406000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G

98-401136; G 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 20010008051 AA 20010719  
 VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
 Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
 TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
 TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 781295 A 20010213; JP 90225321 A  
 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
 ; US 751952 B1 19910829  
 Applic (No,Kind,Date): US 781295 A 20010213  
 Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
 Patented  
 National Class: \* 034406000  
 IPC: \* F26B-013/30  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
 98-401136; G 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 20010008052 AA 20010719  
 VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
 Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
 TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
 TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 781297 A 20010213; JP 90225321 A  
 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
 ; US 751951 A1 19910829; US 766587 A3 20010123  
 Applic (No,Kind,Date): US 781297 A 20010213  
 Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
 Patented; 5314509 Patented  
 National Class: \* 034406000  
 IPC: \* F26B-013/30  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 20010009073 AA 20010726  
 VACUUM PROCESSING APPARATUS AND OPERATING METHOD THERFOR (English)  
 Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
 TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
 TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 766597 A 20010123; JP 90225321 A  
 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
 ; US 751951 A1 19910829  
 Applic (No,Kind,Date): US 766597 A 20010123  
 Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
 Patented; 5314509 Patented  
 National Class: \* 034406000  
 IPC: \* F26B-013/30; F26B-005/04

Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 20010009074 AA 20010726  
 VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
 Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 781270 A 20010213; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751952 B1 19910829  
 Applic (No,Kind,Date): US 781270 A 20010213  
 Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented  
 National Class: \* 034406000  
 IPC: \* F26B-013/30; F26B-005/04  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 20010009075 AA 20010726  
 VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
 Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 781452 A 20010213; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751952 B1 19910829  
 Applic (No,Kind,Date): US 781452 A 20010213  
 Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented  
 National Class: \* 034406000  
 IPC: \* F26B-013/30; F26B-005/04  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 20010009076 AA 20010726  
 SUBSTRATE CHANGING-OVER MECHANISM IN A VACCUM TANK, COMPRISING (English)  
 Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 782194 A 20010214; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829  
 Applic (No,Kind,Date): US 782194 A 20010214  
 Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented



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IPC: \* F26B-013/30; F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010010126 AA 20010802  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
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Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 782193 A 20010214; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 782193 A 20010214  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034406000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010011422 AA 20010809  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781317 A 20010213; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751951 A1 19910829  
Applic (No,Kind,Date): US 781317 A 20010213  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented  
National Class: \* 034092000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010011423 AA 20010809  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 782197 A 20010214; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 782197 A 20010214  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762

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National Class: \* 034092000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010016990 AA 20010830  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 782192 A 20010214; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751951 A1 19910829; US 766587 A3 20010123  
Applic (No,Kind,Date): US 782192 A 20010214  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented  
National Class: \* 034406000  
IPC: \* F26B-013/30; F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010020339 AA 20010913  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 780394 A 20010212; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 780394 A 20010212  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034406000  
IPC: \* F26B-013/30; F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010020340 AA 20010913  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 782196 A 20010214; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751951 A1 19910829; US 766587 A3 20010123  
Applic (No,Kind,Date): US 782196 A 20010214  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;

5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented  
National Class: \* 034406000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010037585 AA 20011108  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 767834 A 20010124; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 767834 A 20010124  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034406000; 034092000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20020032972 AA 20020321  
SUBSTRATE CHANGING-OVER MECHANISM IN VACUUM TANK (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 782195 A 20010214; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829; US 766587 A3 20010123  
Applic (No,Kind,Date): US 782195 A 20010214  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034406000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6263588 BA 20010724  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (US)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 614770 A 20000712; JP 90225321 A  
19900829; US 552572 A3 20000419; US 461432 B3 19991216; US 177495  
A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US  
593870 A3 19960130; US 443039 A1 19950517; US 302443 A3  
19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applic (No,Kind,Date): US 614770 A 20000712  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;

5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented  
National Class: \* 034417000; 034229000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6301801 BA 20011016  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 552572 A 20000419; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751951 A1 19910829  
Applic (No,Kind,Date): US 552572 A 20000419  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented  
National Class: \* 034406000; 034092000; 034228000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6301802 BA 20011016  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (US)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 765379 A 20010122; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 765379 A 20010122  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034406000; 034417000; 034092000; 034229000;  
118729000; 414744100; 414744600; 414939000; 414940000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6330755 BA 20011218  
VACUUM PROCESSING AND OPERATING METHOD (English)  
Patent Assignee: HITACHI LTD (US)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 461432 A 19991216; JP 90225321 A  
19900829; US 177495 A1 19981023; US 61062 A1 19980416; US 882731  
A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US  
302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applic (No,Kind,Date): US 461432 A 19991216  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762

Patented; 5314509 Patented  
National Class: \* 034406000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6330756 BA 20011218  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (US)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 614764 A 20000712; JP 90225321 A  
19900829; US 552572 A3 20000419; US 461432 B3 19991216; US 177495  
A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US  
593870 A3 19960130; US 443039 A1 19950517; US 302443 A3  
19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applic (No,Kind,Date): US 614764 A 20000712  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented  
National Class: \* 034406000; 034417000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6446353 BA 20020910  
VACUUM PROCESSING APPARATUS (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781270 A 20010213; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 781270 A 20010213  
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;  
5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896  
Patented; 5349762 Patented  
National Class: \* 034092000; 034060000; 034236000; 414217000;  
414222130; 414939000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6463676 BA 20021015  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 780427 A 20010212; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 780427 A 20010212  
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;  
5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896  
Patented; 5349762 Patented

National Class: \* 034412000; 034092000; 034218000; 134902000;  
414217000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6314658 BB 20011113  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (US)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 725257 A 20001129; JP 90225321 A  
19900829; US 552572 A1 20000419; US 461432 B3 19991216; US 177495  
A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US  
593870 A3 19960130; US 443039 A1 19950517; US 302443 A3  
19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applic (No,Kind,Date): US 725257 A 20001129  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented  
National Class: \* 034406000; 034092000; 414225000; 134902000  
IPC: \* F26B-005/04; B08B-003/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6332280 BB 20011225  
VACUUM PROCESSING APPARATUS (English)  
Patent Assignee: HITACHI LTD (US)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 767834 A 20010124; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 767834 A 20010124  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented  
National Class: \* 034217000; 034092000; 034222000; 034225000;  
034236000; 414939000; 414940000; 134902000; 156345000  
IPC: \* F26B-019/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6339887 BB 20020122  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 767837 A 20010124; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829; US 766587 A3 20010123  
Applic (No,Kind,Date): US 767837 A 20010124  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented

National Class: \* 034406000; 034417000; 034092000; 034229000;  
 118729000; 414744600; 414939000; 414940000  
 IPC: \* F26B-005/04  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
 98-401136; G 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 6457253 BB 20021001  
 VACUUM PROCESSING APPARATUS (English)  
 Patent Assignee: HITACHI LTD (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
 TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 781317 A 20010213; JP 90225321 A  
 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
 ; US 751951 A1 19910829  
 Applic (No,Kind,Date): US 781317 A 20010213  
 Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;  
 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896  
 Patented; 5349762 Patented; 5314509 Patented  
 National Class: \* 034092000; 414217000; 134902000  
 IPC: \* F26B-013/30  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 6460270 BB 20021008  
 VACUUM PROCESSING APPARATUS (English)  
 Patent Assignee: HITACHI LTD (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
 TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 780394 A 20010212; JP 90225321 A  
 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
 ; US 751952 B1 19910829  
 Applic (No,Kind,Date): US 780394 A 20010212  
 Addnl Info: 6330755 20000801 Patented; 6012235 Patented; 5950330  
 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented;  
 5457896 Patented; 5349762 Patented  
 National Class: \* 034092000; 134902000; 414217000  
 IPC: \* F26B-013/30  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
 98-401136; G 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 6463678 BB 20021015  
 SUBSTRATE CHANGING-OVER MECHANISM IN A VACCUM TANK (English)  
 Patent Assignee: HITACHI LTD (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
 TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 782194 A 20010214; JP 90225321 A  
 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
 ; US 751951 A1 19910829  
 Applic (No,Kind,Date): US 782194 A 20010214  
 Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
 5661973 Patented; 5553396 Patented; 5457896 Patented; 5349762  
 Patented; 5314509 Patented  
 National Class: \* 034573000; 034526000; 034527000; 034573000;

034209000; 034217000; 414217000; 414940000  
IPC: \* F26B-013/10  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6467186 BB 20021022  
TRANSFERRING DEVICE FOR A VACUUM PROCESSING APPARATUS AND OPERATING  
METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 766976 A 20010123; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 766976 A 20010123  
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;  
5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896  
Patented; 5349762 Patented  
National Class: \* 034092000; 043060000; 043236000; 414217000;  
414222130; 414939000  
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Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
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JAPIO Reference No: \* 160351C000155  
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Patent (No,Kind,Date): US 6467187 BB 20021022  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 782192 A 20010214; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
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Applic (No,Kind,Date): US 782192 A 20010214  
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Patented; 5349762 Patented  
National Class: \* 034092000; 034060000; 134085000; 134902000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6470596 BB 20021029  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 767837 A 20010124; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
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Applic (No,Kind,Date): US 767837 A 20010124  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
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 118729000; 414744600; 414939000; 414940000  
 IPC: \* F26B-005/04  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
 98-401136; G 02-107535; G 02-123844  
 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 6473989 BB 20021105  
 CONVEYING SYSTEM FOR A VACUUM PROCESSING APPARATUS (English)  
 Patent Assignee: HITACHI LTD (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
 TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 781297 A 20010213; JP 90225321 A  
 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
 ; US 751951 A1 19910829; US 766587 A3 20010123  
 Applic (No,Kind,Date): US 781297 A 20010213  
 Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;  
 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896  
 Patented; 5349762 Patented  
 National Class: \* 034092000; 034060000; 034236000; 414217000;  
 414222130; 414939000  
 IPC: \* F26B-013/30  
 Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
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 JAPIO Reference No: \* 160351C000155  
 Language of Document: English  
 Patent (No,Kind,Date): US 6484414 BB 20021126  
 VACUUM PROCESSING APPARATUS (English)  
 Patent Assignee: HITACHI LTD (JP)  
 Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
 TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
 Priority (No,Kind,Date): US 781298 A 20010213; JP 90225321 A  
 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
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 Applic (No,Kind,Date): US 781298 A 20010213  
 Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;  
 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896  
 Patented; 5349762 Patented  
 National Class: \* 034092000; 034060000; 034236000; 414217000;  
 414222130; 414939000  
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 98-401136; G 02-107535; G 02-123844  
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 Patent (No,Kind,Date): US 6484415 BB 20021126  
 VACUUM PROCESSING APPARATUS (English)  
 Patent Assignee: HITACHI LTD (JP)  
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 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
 ; US 751952 B1 19910829  
 Applic (No,Kind,Date): US 782193 A 20010214  
 Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;  
 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896

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National Class: \* 034092000; 034060000; 034236000; 414222130;  
414217000  
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98-401136; G 02-107535; G 02-123844  
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Language of Document: English  
Patent (No,Kind,Date): US 6487791 BB 20021203  
VACUUM PROCESSING APPARATUS (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
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Priority (No,Kind,Date): US 782196 A 20010214; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
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National Class: \* 034217000; 034092000; 034222000; 034225000;  
034236000; 134902000; 414939000; 414940000; 156345000  
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VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
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19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 766587 A 20010123  
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;  
5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896  
Patented; 5349762 Patented  
National Class: \* 034412000; 034406000; 034418000; 034500000;  
034092000; 034218000; 134902000; 414939000; 414222130  
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SUBSTRATE CHANGING-OVER MECHANISM IN VACUUM TANK (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 782195 A 20010214; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
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National Class: \* 034573000; 034526000; 034527000; 034209000;  
034217000; 414217000; 414939000; 414940000  
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VACUUM PROCESSING APPARATUS (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
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19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 782197 A 20010214  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034092000; 414225000; 134902000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
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VACUUM PROCESSING APPARATUS (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781293 A 20010213; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 781293 A 20010213  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034217000; 034092000; 034222000; 034225000;  
034236000; 414939000; 414940000; 134902000; 156345000  
IPC: \* F26B-019/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
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